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## FIRST SUPPLEMENT TO THE 'DIPTERA OF PORTO RICO AND THE VIRGIN ISLANDS'<sup>1</sup>

By C. H. CURRAN

During the past year, two collections of Diptera from Porto Rico have been received by the author and, since several forms not previously examined are contained in the material, it seems advisable to publish a supplementary list at this time. In some cases I have omitted records of species in the collections now before me, since they are common and have previously been reported from various localities in Porto Rico.

The collections received have been made by Dr. W. T. M. Forbes of Cornell University, during a short collecting trip to Porto Rico and Dr. M. D. Leonard of the Insular Experiment Station, and Dr. W. A. Hoffman, of the University of Porto Rico. To them I wish to express my thanks for the privilege of examining the material and also for their generosity in donating to The American Museum of Natural History all type specimens and uniques. Wherever the material permits, paratypes of the species described are deposited in the Cornell University Collection.

List of species not previously recorded from Porto Rico or the Virgin Islands:

<i>Tabanus nervosus</i> , n. sp.	<i>Euxesta mitis</i> , n. sp.
<i>Tabanus parvulus</i> Williston	<i>Pseudogriphoneura vittifacies</i> , n. sp.
<i>Erax faorbesi</i> , n. sp.	<i>Minettia picticornis</i> Coquillett
<i>Sigalæssa insularis</i> , n. sp.	<i>Sobarcephala bivittata</i> Melander and Argo.
<i>Plagiotoma pura</i> , n. sp.	<i>Epigrimyia townsendi</i> , n. sp.
<i>Setellia amabilis</i> Williston	

List of species previously recorded from the Islands but either not mentioned in the 'Diptera of Porto Rico' or recorded under a different name:

<i>Tabanus tinctus</i> Walker	<i>Erax portoricensis</i> Hine
<i>Tabanus stigma</i> Fabricius	<i>Erax stylatus</i> Fabricius
<i>Tabanus hookeri</i> Townsend	<i>Oscinella forbesi</i> , n. sp.
<i>Diplocampta ræderi</i> , n. sp.	

<sup>1</sup>'Scientific Survey of Porto Rico and the Virgin Islands,' XI, part 1.

## STRATIOMYIDÆ

Six genera are recorded from the Islands and to these another must be added. The species upon which it is based is not new although it has remained unknown for a century.

**NEUROTA**, new genus

Related to *Aochletus* Osten Sacken but the scutellum is unarmed.

Face convex, receding, scarcely projecting beyond the eyes; eyes of male contiguous above, short pilose; third antennal segment elongate oval, tapering apically, the two-jointed style not distinctly differentiated and bearing short, appressed hair, the annules of the segment not haired. Scutellum unarmed. Four posterior veins, all arising from the discal cell and all reaching almost to the wing-margin. Abdomen short, broad, subrectangular from dorsal view, composed of five or six segments. Legs simple, short.

GENOTYPE.—*Sargus bicolor* Wiedemann.

**Neurota bicolor** Wiedemann

*Sargus bicolor* WIEDEMANN, 1830, 'Ausser. Zweifl.' II, p. 41.

Four males and one female, Puerto Real, Vieques Island, April 29, 1930 (W. T. M. Forbes).

Head black, the male with the frontal triangle whitish, the female with a broad, narrowly interrupted white band above the antennæ; face, and front of the female, with silvery tomentum; antennæ reddish, the style black. Thorax black, golden or pale yellow tomentose; a narrow white stripe along the upper margin of the pleura in front of the wings; posterior calli reddish. Wiedemann states that the color is golden green but this applies only when the insect is examined without magnification. Legs and abdomen reddish yellow, the fifth abdominal segment sometimes mostly black or brown. Wings hyaline, with brownish yellow veins and luteous stigma. The length varies from 4 to 5.5 mm.

**Hermetia albifarsis** Fabricius

FABRICIUS, 1805, 'Syst. Antl.' p. 63.

One female, Las Cruces, Cidra, April 4, 1930 (W. T. M. Forbes).

The absence of the translucent yellowish or whitish spots on the second abdominal segment will at once distinguish this species from *illucens* Linnæus.

## TABANIDÆ

At the time of the preparation of the report on the 'Diptera of Porto Rico and the Virgin Islands,' no representatives of this family could be located in the collection, although two species were listed. Since that time five species have come to hand and I am enabled to present a review of the species occurring in the Islands. Since the species of *Chrysops* occurring in Porto Rico is rather aberrant, I include the genus *Diachlorus* Osten Sacken in the key.

## KEY TO GENERA

1. Posterior tibiæ without spurs at the tip..... 2.
- Posterior tibiæ with spurs at the tip..... *Chrysops* Meigen.
2. Third antennal segment cylindrical, basal part not flattened or angulate..... 3.
- Third antennal segment laterally compressed and more or less angulate above near the base..... *Tabanus* Linnæus.
3. Front of female narrow; face rather evenly convex..... *Diachlorus* Osten Sacken.
- Front of female wide; face with three convex swellings..... *Chrysops* Meigen.

*Chrysops variegatus* DeGeer

*Tabanus variegatus* DEGEER, 1776, 'Mem. Hist. Ins.', VI, p. 230 (Fig.).

*Tabanus costatus* FABRICIUS, 1794, 'Ent. Syst.', IV, p. 373.

Four females, Coamo Springs, January 7, 1915 (Crampton); Mayaguez, July 24-29, 1914 (Watson) and June 21-23, 1915 (Lutz and Mutchler).

In this species the spurs on the posterior tibiæ are so small as to be almost wanting, and I am not sure that they are always present.

*TABANUS* Linnæus

Five species of *Tabanus* are known to occur in the Islands, two of them originally described from St. Thomas. One of these I have before me, but the second has not been recognized since it was originally described.

## Table of Species

1. Smaller species, not over 15 mm. in length..... 2.
- Large species, measuring more than 20 mm. in length..... *tinctus* Walker.
2. All the cross-veins spotted or clouded with brown..... 3.
- Wings practically unicolorous; subcallus shining..... *hookeri* Townsend.
3. Veins reaching the hind margin of the wing strikingly bordered with black.
- nervosus*, n. sp.
- Veins reaching the hind margin not strikingly darkened..... 4.
4. Costa broadly brown apically..... *parvulus* Williston.
- Costa not broadly brown apically..... 5.

5. Frontal callus as long as wide, practically square, front with median and upper brownish band..... *stigma* Fabricius.  
 Frontal callus almost or quite twice as wide as high; front uniformly cinereous-white pollinose and very wide (Florida)..... *psammophilus* Osten Sacken.

**Tabanus tinctus** Walker

WALKER, 1850, 'Ins. Saunders., Dipt.,' p. 29.

I have not seen this species which was originally described from "St. Thomas?" The length is given as 11½ lines and, since none of the other species known to occur in the islands nearly approaches this in size, it should be readily recognized.

**Tabanus stigma** Fabricius

FABRICIUS, 1805, 'Syst. Antl.,' p. 104.

*Tabanus compleatus* WALKER, 1848, 'List. Dipt. Brit. Mus.,' p. 185.

Male, Villa Margarita, Cataño, April 21, 1930 (W. T. M. Forbes); two males, Dorado, May 23, 1930, and female, Guayama, July 26, 1930 (W. A. Hoffman).

I have no doubt about the above synonymy being correct as, in both cases, the type material came from St. Thomas and the specimens before me fit the descriptions quite well.

This is the species which has been recorded from Porto Rico as *psammophilus* Osten Sacken and it seems very strange that the two should have been confused. *T. stigma* is decidedly smaller than *psammophilus* and the abdomen bears distinct, interrupted brownish fasciae on at least several of the segments. It also lacks the black median vitta and this character may be used to distinguish *psammophilus* when the abdomen has become discolored. Normally, the abdomen of *psammophilus* is uniformly cinereous-white pollinose, but in older specimens the whitish sheen tends to disappear, the median dark vitta then becoming obvious. My smallest specimen of *psammophilus* measures almost 13 mm. in length, the largest of *stigma* about 11.5 mm. The females are, of course, readily distinguished by the frontal characters.

**Tabanus nervosus**, new species

Figure 1

Larger than *stigma* Fabricius and with the basal half of the third antennal segment and the annulate part deep black, the antennæ otherwise reddish. It differs from *psammophilus* Osten Sacken by the very much smaller frontal callus and the black tips to the veins. Length, 11.5 to 12.5 mm.

**FEMALE.**—Head densely cinereous white pollinose; pile white, the front with short, sparse, black hairs. Front of moderate width, slightly narrowing below;

callus sub-oval, well separated from the orbits, transverse; ocelli wholly absent; front unicolorous. Palpi whitish, short, broad and rounded apically, white-haired. Antennae yellowish red, the basal two-fifths of the third segment and the annulate portion, deep black; third segment not at all produced, decidedly less than twice as long as wide.

Thorax brownish yellow in ground color, the pleura with large dark spots, the mesonotum with five black or brown vittæ. The median black vitta is very broad and is only narrowly separated from the adjoining ones, the outer vittæ are represented by a stripe on either side above the roots of the wings. The black stripes do not reach the scutellum and they are so wide as to make the disc of the thorax appear black, although it is probable that the grayish pollen would almost conceal the ground color in fresh specimens. The whitish hair of the thorax is very fine, that on the mesonotum and scutellum appressed.

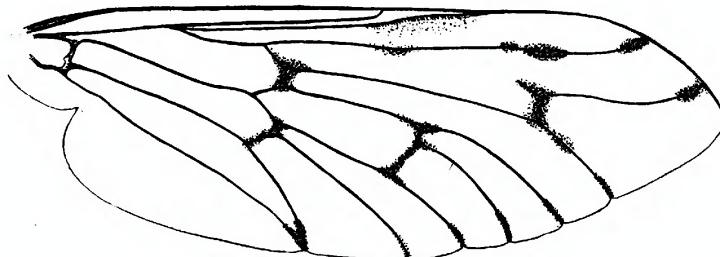


Fig. 1. Wing of *Tabanus nervosus*, new species.

Legs reddish, the tibiæ and basal tarsal segment yellow and clothed with white pollen; apices of all the femora and tibiæ and the apical tarsal segments black; trochanters brown; apex of first segment of the tarsi and much of the two following segments black. Hair yellowish white, the black parts of the tibiæ and tarsi with black hair.

Wings with a distinct whitish tinge, all the cross-veins and the tips of the veins bordered with black. Squamæ white. Halteres reddish with somewhat darker knob.

Abdomen dull reddish brown, the first segment and sides of the following two reddish; apices of second and following segments cinereous. The abdomen is apparently rather discolored so that I am unable to determine the color of the pollen or the extent of the pale markings. The ground color shows median paler spots on the second and third segments and subdorsal spots on the sides of the second to fourth segments. The presence of these spots leads me to believe that fresh specimens will show three rows of small whitish spots on at least the second to fourth segments. Hair yellowish white, appressed, the apical three segments with coarse, black, subappressed hair.

**TYPES.**—Holotype, female, Villa Margarita, Cataño, April 21, 1930 (Forbes); paratype, female, San Juan, August 19, 1914.

The paratype is much paler in color than the type but is not in as good condition.

**Tabanus parvulus** Williston

WILLISTON, 1887, Trans. Kans. Acad. Sci., X, (1885-1886), p. 141.

One female, Jajome Alto, June 16, 1930 (Hoffman).

*Tabanus parvulus* was described from a single female from San Domingo and I do not know of any subsequent records. The type is defective in that it lacks the palpi which are long and slender and clothed, at least in part, with short black hair. Unfortunately, the specimen before me has been wet, so that I am unable to judge accurately the color of the pollen. However, it agrees in all characters with Williston's description and, since the wing markings, etc. are quite distinctive, there can be no doubt of its identity.

There is a very closely related species occurring in Cuba but this latter has the third antennal segment longer, more slender and without any angulation. The coloration of the wings is also somewhat different and the thorax is darker in ground color.

**Tabanus hookeri** Townsend

TOWNSEND, 1915, 'Ins. Ins. Mens.', III, p. 48.

Four males and one female, Puerto Real, Vieques Island, April 28 and 29, 1930 (Forbes, Leonard).

This is a small grayish-yellow species, the abdomen mostly reddish with three more or less distinct rows of pale spots. It is easily recognized by its small size (10 to 11.5 mm.) and the bare, shining reddish subcallus. There are no ocelli and the eyes are haired in both sexes.

In addition to the specimens enumerated above there is a single female from Cuba.

**BOMBYLIIDÆ**

The following key includes all the genera so far recorded from the Islands.

**KEY TO GENERA**

1. The furcation of the second and third veins occurs opposite or almost opposite the anterior cross-vein at almost a right angle. .... 2.
2. The furcation takes place well before the cross-vein at a sharp angle. .... 6.
3. Antennal style not terminating in a pencil of hairs. .... 3.
4. Antennal style terminating in a pencil of hairs, distinctly separated from the third segment. .... *Anthrax* Scopoli.
3. Style distinctly separated from the third antennal segment. .... 4.
4. Style not separated from the third segment. .... 5.
5. Four submarginal cells. .... *Hyperalonia* Rondani.
4. Three submarginal cells. .... *Exoprosopa* Macquart.

5. Second vein curved almost S-shaped before the apex..... *Diplocampta* Schiner.
- Second vein with a single curve..... *Villa* Lioy.
6. Wings with four posterior cells..... 7.
- Wings with three posterior cells..... *Geron* Meigen.
7. First posterior cell closed..... *Heterostylum* Macquart.
- First posterior cell open..... *Phthiria* Meigen.

#### **Hyperalonia cerberus** Fabricius

*Anthrax cerberus* FABRICIUS, 1794, 'Ent. Syst.,' IV, p. 256.

Male, Salinas, Vieques Island, April 29, 1930 (M. D. Leonard); female, Dorado, March 28, 1930 (W. A. Hoffman).

#### **Villa gorgon** Fabricius

*Anthrax gorgon* FABRICIUS, 1805, 'Syst. Antl.,' p. 126.

Three specimens from Salinas, Vieques Island, April 29, 1930 (Leonard) and two from Guayanilla, April 6, 1930 (Forbes).

#### **Villa lucifer** Fabricius

*Bibio lucifer* FABRICIUS, 1775, 'Syst. Ent.,' p. 759.

Four specimens, Coamo Springs, April 8, 9, 1930 (Forbes).

#### **Villa lateralis** Say

*Anthrax lateralis* SAY, 1823, Journ. Acad. Nat. Sci. Phila., III, p. 42.

One specimen, Salinas, Vieques Island, April 29, 1930 (Leonard).

#### **DIPLOCAMPTA** Schiner

This genus, established for a species occurring in Chile, has two representatives in North America. These two species differ from the genotype in having the third antennal segment conical instead of round basally and with a pronounced style. In wing venation the species agree well except that there are seldom more than three submarginal cells, very rarely four as in the genotype. The three species are separable as follows:

##### TABLE OF SPECIES

1. All the cross-veins broadly clouded with black or brown..... 2.
- Cross-veins not clouded (Chile)..... *singularis* Schiner.
2. Petiole of the third posterior cell much longer than the cross-vein; second abdominal segment with a very broad white band..... *ræderi*, n. sp.
- Petiole shorter than the cross-vein; abdomen without white fascia (Mexico, Panama)..... *paradoxa* Jænnicke.

*Diplocampta ræderi*, new species

Figure 2

*Villa paradoxa* CURRAN, 1928, 'Sci. Surv. P. R. and Virgin Islands,' XI, part 1, p. 20.

This species is very similar to *paradoxa* Jænnicke and was identified as that species by von Rœder. It is, however, a much darker species and is readily distinguished by the characters given in the key. Had I not secured a typical specimen of *paradoxa* in the Canal Zone, I should still consider the Antillean form to be that species, but the two are so distinct that a name must be given to the West Indian form, of which Dr. Leonard has secured fresh specimens. Length, 7.5 to 8 mm.

**MALE.**—Head black in ground color, brown pollinose, the scale-like tomentum brownish-golden; hair black. Occipital pile white. Face acute. Proboscis as long as the head. Antennæ black, the first segment reddish; third segment conical, narrow on apical half.

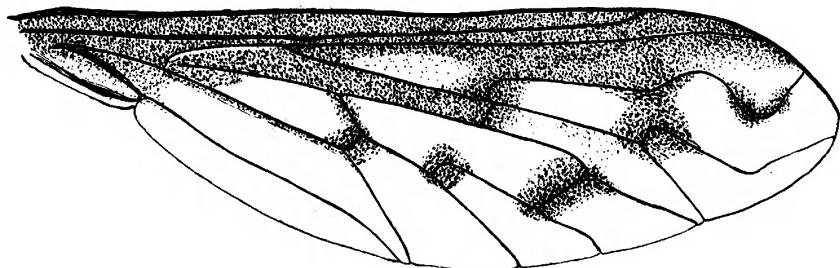


Fig. 2. Wing of *Diplocampta ræderi*, new species.

Thorax black, the anterior and lateral margins white pilose, the mesonotum with golden tomentum mixed with more or less black, the posterior border and base of the scutellum white tomentose. Scutellum with golden and black tomentum and bearing four pairs of marginal bristles. Lower half of the pleura yellowish-haired although there are black hairs intermixed.

Legs brown, with black and yellowish tomentum; anterior tibiae without spicules.

Wings hyaline, with a dark brown pattern as shown in figure 2.

Abdomen black; second, fifth, sixth, and seventh segments white tomentose on the basal two-thirds, the apices of the segments with tawny tomentum, the third and fourth segments with black tomentum predominating on the disc and with a transverse white spot on either side; hair on the sides of the abdomen toward the base white, the bristly hair black.

**FEMALE.**—Differs sexually.

**TYPES.**—Holotype, male, and paratype, male, Salinas, Vieques Island, April 29, 1930 (Leonard). Allotype, female, and two males and one female, Ensenada, June 14-19, 1915; one male, St. Thomas Island, March 13, 1925 (Lutz).

In *paradoxa* Jænnicke the hair and tomentum on the thorax and abdomen are yellowish and there are but few black tomentose hairs.

## ASILIDÆ

Four specimens belonging to this family were collected by Dr. Forbes. These represent an undescribed species of *Erax*.

**ERAX** Scopoli

The species of *Erax* reported from Porto Rico are tabulated in the accompanying key. *Erax bastardii* Macquart, reported from the Island, is omitted, since the record is almost certainly based upon a misidentification.

TABLE OF SPECIES

1. Costa of male not dilated.....	<i>portoricensis</i> Hine.
Costa of male dilated.....	2.
2. Males.....	3.
Females.....	5.
3. Lower forceps of the genitalia black-haired.....	4.
Lower forceps of the genitalia white-haired.....	<i>forbesi</i> , n. sp.
4. Apical three abdominal segments wholly silvery.....	<i>tortola</i> Curran.
Apical two and one-half abdominal segments silvery.....	<i>stylatus</i> Fabricius.
5. Anterior edge of the mesonotum narrowly white-haired.....	<i>tortola</i> Curran.
Anterior edge of the mesonotum with white hair only laterally.....	6.
6. Apical segment of the palpi white-haired on the basal two-thirds.....	<i>forbesi</i> , n. sp.
Apical segment of the palpi black-haired on almost the whole length dorsally and on the whole apical half.....	<i>stylatus</i> Fabricius.

**Erax portoricensis** Hine

HINE, 1919, Ann. Ent. Soc. America, XII, p. 128.

I have not seen this species which was described from a single male from Ensenada. The type is supposed to be in the American Museum but evidently has not been returned by Dr. Hine.

**Erax stylatus** Fabricius

*Asilus stylatus* FABRICIUS, 1775, 'Syst. Ent.', p. 795.

*Erax rufitibia* MACQUART, 1847, 'Dipt. Exot.', Suppl. III, p. 187 (27).

*Erax haitensis* CURRAN, 1928, 'Dipt. Porto Rico and Virgin Islands,' p. 24.

In 1928 I recognized this species from St. Thomas and Tortola Islands under the name *haitensis*. It is most likely that Fabricius' type came from St. Thomas, in which case there can be no doubt about the synonymy. It is probable the *E. rufitibia* Macquart is this species although we must not overlook the fact that it may be the same as *haitensis* Macquart, described on the following page.

The species described by Hine as *E. stylatus* is not that species but is evidently the same as *haitensis* Macquart, a species having white-haired

palpi. The description given by Fabricius will not apply to this form, since the black markings on the abdomen are very much reduced.

*E. fortis* Walker may also prove to be a synonym of *stylatus*.

The above disposition of *E. rufitibia* Macquart leaves *rufitibia* Hine without a name, but inasmuch as a thorough study of the insular species should be undertaken, I leave the species unnamed.

***Erax forbesi*, new species**

Figure 3

Related to *stylatus* Fabricius and *tortola* Curran but at once distinguished by the white-haired lower forceps in the male and by the more extensively white-haired palpi in the female. Length, including genitalia, 17 to 19 mm., exclusive of genitalia, 15 mm.

**MALE.**—Head black, grayish pollinose with brownish tinge; hair white, bristles on upper half of the mystax and on the ocellar triangle, black, those on the lower half of the mystax yellow; the strong facial swelling occupies the lower two-thirds of the face. Antennæ black, white-haired; third segment elongate oval, style longer than either antenna, gently swollen just before the acute tip. Palpi black, white-haired, with one or two black bristles at the apex.

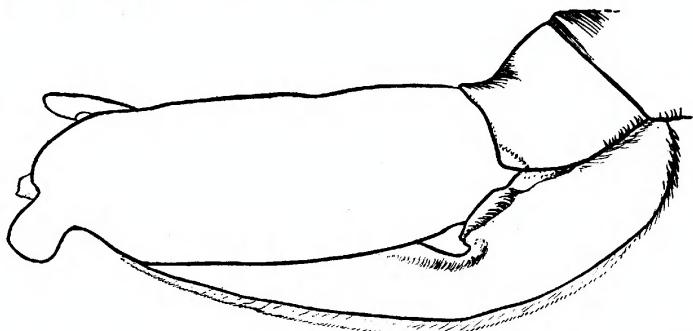


Fig. 3. Lateral view of male genitalia of *Erax forbesi*, new species.

Thorax cinereous pollinose, the mesopleura and the anterior two-thirds of the mesonotum with strong brownish-yellow tinge; black markings conspicuous. Hair white, black on the mesonotum except posteriorly, the humeri white-haired in front. Scutellum white-haired and with three or four marginal pairs of pale yellowish bristles.

Legs black; tibiæ reddish with broad black apices; femora sometimes mostly brownish red. Hair white on the femora and under surface of the tibiæ; elsewhere black; bristles black, the hairlike bristles on the tibiæ white.

Wings hyaline, the apical fourth tinged with brown. Anterior branch of third vein with an appendage; costa moderately dilated.

Abdomen black, the sixth and seventh segments silvery, the sides of the basal segments, expanding posteriorly, broadly cinereous pollinose. The abdomen has been discolored so that it is not possible to determine the color of the dorsal pollen. Hair

white, not conspicuous dorsally. Genitalia shining black, black-haired, the lower lamellæ white-haired.

FEMALE.—Third antennal segment slightly shorter; palpi black-haired on the apical third; mesonotal pollen more yellowish brown; pollen on the dorsum of the abdomen brownish, paler posteriorly on each segment. Ovipositor long (4.5 mm.), shining black.

TYPES.—Holotype, male, allotype, female, and two female paratypes, Coamo Springs, April 5, 1930 (Forbes).

### DOLICHOPIDÆ

#### **Sciarus unicinctus** Van Duzee

*Psilopus unicinctus* VAN DUZEE, 1927, Amer. Mus. Novit., No. 262, p. 6.

Three males and two females, Dorado, March 28, 1930 (W. A. Hoffman).

### CHLOROPIDÆ

#### **Hippelates** Loew

The three species in the present collection have all been previously recorded.

#### **Hippelates peruanus** Becker

BECKER, 1912, Ann. Mus. Nat. Hung., X, p. 170.

Two females, Puerto Real, Vieques Island, April 29, 1930 (W. T. M. Forbes).

#### **Hippelates partitus** Becker

BECKER, 1912, Ann. Mus. Nat. Hung., X, p. 89.

One male, Puerto Real, Vieques Island, April 29, 1930 (Forbes).

#### **Hippelates flavipes** Loew

LOEW, 1865, 'Cent.' VI, No. 95.

Three specimens from Puerto Real, Vieques Island, April 28 and 29, 1930 (Forbes).

#### **Oscinella** Becker

In my report on the 'Diptera of Porto Rico' I used the name *Batanobia* Lioy for this genus. A study of Lioy's paper indicates that the genotype probably belongs to a different genus, but the description is so inadequate that the species is entirely unrecognizable. Under the circumstances, the logical thing to do is to make use of the only name available, *Oscinella* Becker, proposed to replace *Oscinis* Latreille, preoccupied.

Dr. Forbes secured a series of the form which I had doubtfully recorded as *Botanobia coxendix* Fitch (p. 58), and this fresh material confirms my expressed belief that *coxendix* does not occur on the Islands. The species is undescribed and is abundantly distinct from *coxendix*.

***Oscinella forbesi*, new species**

Black, the head and legs largely yellowish; mesonotum wholly pollinose; ocellar triangle pollinose. Length, 1.1 to 1.5 mm.

**MALE AND FEMALE.**—Face, cheeks and anterior half of the front yellowish. Upper part of the front black, cinereous pollinose; frontal triangle shining black, reaching the anterior third of the front, its sides practically straight, the immediate vertex and the ocellar triangle cinereous pollinose; hair short, fine, black; no distinct frontal bristles. Occiput cinereous pollinose. Cheeks brownish behind, very narrow, wider in the female. Palpi yellow, rather large. Antennæ reddish yellow; third segment suborbicular, broader than long, broadly brownish above; arista brownish, short pubescent.

Thorax black, thinly cinereous pollinose, the mesonotum mostly brown pollinose, the lateral and anterior borders cinereous. On the anterior half there are three rows of hairs between the dorsocentral rows; on the posterior half the hairs are not arranged in rows. Hair and bristles black or brown. Pleura mostly shining black, pollinose above. Scutellum with one pair of strong bristles, a weak pair and scattered hairs.

Posterior four coxæ and all the femora brown or black, the anterior coxæ and all the tibiæ and tarsi yellowish, the tibiæ usually tinged with brown medianly. Hair yellow or brownish yellow.

Wings cinereous hyaline; third costal section a little more than half as long as the second; fourth vein ending practically in the tip of the wing. Halteres white.

Abdomen shining brownish, the first segment more or less reddish. Hair black.

**TYPES.**—Holotype, male, allotype, female, Puerto Real, Vieques Island, April 28, 1930; paratypes, 12 females, Puerto Real, April 28 and 29 (W. T. M. Forbes); eight females, Adjuntas, June 8–13, 1915; Aibonito, July 14–17, 1914; Arecibo, June 24–25, 1915; Corozal, July 2, 1915; Manati, June 27–29, 1915; Naguabo, March 7–9, 1914; Charlotte Amilia, St. Thomas Island, June 3, 1911. Paratypes in Cornell University Collection.

**ASTEIIDÆ**

This family was not included in the key. It traces to Chloropidæ couplet 33, and may be distinguished by the entire costa. In the Chloropidæ the costa is fractured before the end of the first vein. There are, three genera of Asteiidæ known from America.

**KEY TO GENERA**

1. Posterior cross-vein present..... 2.  
Posterior cross-vein absent..... *Asteia* Meigen.
2. Front with two bristles near the middle, half-way between the ocellar triangle and antennæ..... *Crepidohamma* Enderlein.  
Front with only weak orbitalis..... *Sigalæssa* Coquillett.

**SIGALOESSA** Coquillett

The three North American species are separable as follows:

## TABLE OF SPECIES

1. Mesonotum pale ferruginous or reddish yellow..... 2.
- Mesonotum shining black; front wholly shining black..... *bicolor* Loew.
2. Lower part of pleura with two blackish spots; mesonotum reddish yellow.  
  *flaveola* Coquillett.
- Lower part of pleura immaculate; mesonotum shining pale ferruginous.  
    *insularis*, n. sp.

**Sigaloessa insularis**, new species

Brownish red or pale ferruginous and yellow. Length, 1.5 mm.

**FEMALE.**—Face and anterior half of the front dull yellow; cheeks and oral margin reddish brown, the former white pollinose. Front with two weak orbital bristles on the upper third, the anterior pair reclinate, the posterior pair weaker and proclinate; ocellars and postocellars very weak; verticals strong. Proboscis and palpi reddish yellow. Antennæ reddish yellow; arista pale brown, rather short-haired.

Thorax pale ferruginous; humeri and pleura reddish yellow, the scutellum pale yellow. A row of very inconspicuous acrostical hairs; two pairs of dorsocentrals. Scutellum with a pair of marginal bristles and one or two marginal hairs. Pleura with a median longitudinal, blackish stripe.

Legs reddish yellow. Wings hyaline; the tip of the second vein joins the tip of the first, the posterior cross-vein situated beyond the tip of the second vein; third and fourth veins approaching each other apically; no distinct alula.

Abdomen pale luteous dorsally, the tips of the segments darkened; sides brownish; under surface brownish, the membrane yellow.

**TYPE.**—Female, Puerto Real, Vieques Island, April 29, 1930 (W. T. M. Forbes).

**OCHTHIOPHILIDÆ**

The original report recorded only one species from the Islands. Dr. Forbes secured a single specimen of *Leucopis bella* Loew, a species listed on page 116. The two genera known from the Islands are separable as follows:

- A. Frontal orbits with bristles..... *Acrometopia* Schiner.
- B. Frontal orbits without bristles..... *Leucopis* Meigen.

**Leucopis bella** Loew

LOEW, 1865, 'Cent.', VI, p. 99.

One specimen, Puerto Real, Vieques Island, April 28, 1930 (W. T. M. Forbes).

The genus *Leucopis* contains a small number of species, all of which are beneficial. The larvæ are predaceous, feeding on aphids and mealy

bugs and may be readily recognized by their peculiar shape. The posterior end is more or less truncate and the elongated spiracles project from either side, so that the larva is roughly triangular in outline from dorsal view. All I have seen have been dirty yellowish or grayish yellow in color and they may very often be found among colonies of aphids, particularly those frequenting the stems of plants. When not feeding they usually rest at the juncture of the leaf petiole and the stem.

#### MILICHIIDE

##### *Milichiella lacteipennis* Loew

*Lobioptera lacteipennis* Loew, 1865, 'Cent.', VI, p. 97.

Male and two females, Puerto Real, Vieques Island, April 29, 1930 (W. T. M. Forbes).

#### TRYPANEIDE

Since the publication of my report two new genera have been established in this family for species previously placed in *Euaresta* Loew. Both genera are represented in the Islands but up to the present no species of *Euaresta* are known. The following key separates the genera recorded from the region.

##### KEY TO GENERA

1. Proboscis elongate and geniculate..... *Ensina* Desvoidy.
- Proboscis short, not geniculate..... 2.
2. Female ovipositor as long as the body and curved; wings brownish in front, hyaline behind..... *Toxotrypanea* Gerstaecker.
- Female ovipositor short or not curved; wings with markings on the posterior half..... 3.
3. Scutellum with four bristles..... 6.
- Scutellum with two bristles..... 4.
4. Apex of the wing wholly black; three pairs of cruciate orbitals..... *Aciura* Desvoidy.
- Apex of wing with hyaline spots; two pairs of cruciate orbitals..... 5.
5. Basal half of the wing hyaline..... *Trypanea* Schrank.
- Basal half of the wing with brown markings..... *Dyseuaresta* Hendel.
6. One pair of dorsocentral bristles..... *Anastrepha* Schiner.
- Two pairs of dorsocentrals..... 7.
7. Anal cell drawn out into a long, narrow triangle..... 8.
- Anal cell with or without a short triangular prolongation behind..... 9.
8. Anterior cross-vein transverse..... *Tetraeuaresta* Hendel.
- Anterior cross-vein oblique..... *Plagiotoma* Loew.
9. Discal cell longest anteriorly..... *Euaresta* Loew.
- Discal cell very much longer posteriorly..... *Polymorphomyia* Snow.

**ACIURA** Desvoidy**Aciura insecta** Loew

LOEW, 1862, 'Mon. N. Amer. Dipt.,' I, p. 72 (f).

One specimen of this common and widely distributed species, Isabela Substation, April 24, 1930 (Forbes).

**DYSEUARESTA** Hendel

HENDEL, 1928, 'Ent. Mitt.,' XVII, p. 368.

Three species belonging to this genus are recorded from Porto Rico. Two of them have already been reported upon but I have not seen specimens of *mexicana* from the West Indies.

## TABLE OF SPECIES

1. Marginal cell with two hyaline spots, the apical spot absent.....	2.
Marginal cell with three hyaline spots.....	<i>melanogaster</i> Loew.
2. Apex of the stigmal cell hyaline.....	<i>plesia</i> Curran.
Stigmal cell wholly brown.....	<i>mexicana</i> Wiedemann.

**TETREUARESTA** Hendel

HENDEL, 1928, 'Ent. Mitt.,' XVII, p. 368.

In this genus there are four scutellar bristles, three pairs of cruciate fronto-orbitals and the third wing vein is setose on almost its entire length. *Euaresta* Loew differs in having the third vein bristled only basally and but two pairs of orbitals.

*T. obscuriventris* Loew, occurring in the Islands, is the type of the genus.

**POLYMORPHOMYIA** Snow**Polymorphomyia basilica** Snow

SNOW, 1894, Kans. Univ. Quart., II, p. 165 (f.).

Male, Naguabo, March 7-9, 1914. There is also a specimen from the Republic of Dominica, taken in June 1915.

**PLAGIOTOMA** Loew

## TABLE OF SPECIES

1. Only two round prescutellar black spots on the mesonotum.....	2.
Four black presutural spots.....	<i>rudolphi</i> Lutz and Lima.
2. Second basal cell partly or wholly yellow.....	3.
Second basal cell with scarcely any yellow and then only very narrowly along the veins.....	5.
3. Second basal cell wholly yellow.....	<i>biseriata</i> Loew.
Second basal cell partly hyaline.....	4.

4. Abdomen with an interrupted median black vitta. .... *trivittata* Lutz and Lima.  
 Abdomen without a median black vitta. .... *jonasi* Lutz and Lima.

5. Abdomen wholly black. .... *discolor* Loew.  
 Abdomen yellow with lateral black spots. .... 6.

6. Pleura without black spots except at the base of the halteres.  
*incompleta* Williston.

Pleura with black spots in addition to those about the halteres. .... 7.

7. The apical hyaline fascia extends obliquely from the costa to the fourth vein.  
*pura*, n. sp.  
 The apical hyaline fascia extends obliquely from the apex of the wing to the  
 second longitudinal vein. .... *obliqua* Say.

**Plagiotoma pura, new species**

Similar to *discolor* Loew except that the abdomen is shining rusty-reddish with black lateral spots. Length, 4 mm.

**MALE.**—Head reddish yellow, evidently with whitish pollen; occiput darker on the sides; antennae and palpi reddish yellow.

Thorax rusty reddish-yellow, with opaque black spots as follows: one on either side of the mesonotum in front of the scutellum; one on the sternopleura, pteropleura, and in front of the root of the halteres. The spot in front of the halteres is triangular, the others circular.

Legs reddish yellow, with yellow hair. Wings hyaline and yellowish, with blackish markings along the border. The yellowish markings are arranged in the form of four arched fasciae, the apical two united at the posterior end, the second and third at the anterior end, the basal one not connected with the others. The stigma, a spot about midway between the apices of the first and second veins, the apical border of the wing and the broad posterior ends of the first and second yellowish fasciae, are blackish.

Abdomen rusty reddish, the third to fifth segments each with large shining black spot on either side. Hair black.

**TYPE.**—Male, Jajome Alto, June 18, 1930 (Hoffman).

This species agrees with *discolor* Loew in the wing pattern, in having the second and third colored fasciae connected at the base (see Loew, 'Mon. N. A. Dipt.,' III, Plate x, fig. 1).

**ORTALIDÆ**

The present collections contain three species not previously examined by me. One of them has not been previously recorded from the Islands, while another is new to science. In the list of species on page 116, *Ortalis quadrivittatus* Macquart should be removed. The record is obviously based upon a misidentification, since Macquart's species came from Africa and belongs to the genus *Rivellia* Desvoidy. The addition of two genera to the list makes an amended key desirable.

## KEY TO GENERA

1. First wing vein wholly bare ..... 4.  
First wing vein setose or hairy on apical third or more ..... 2.
2. Scutellum with a large, polished black swelling on either side. *Xanthacrona* Wulp.  
Scutellum without such swellings ..... 3.
3. Anal cell rounded apically ..... *Macrostenomyia* Hendel.  
Anal cell drawn out into a long point posteriorly ..... *Acrosticta* Loew.
4. Third antennal segment rounded apically ..... 5.  
Third antennal segment angled at its dorsal apex ..... *Chatopsis* Loew.
5. Anal cell rounded apically ..... *Setellia* Desvoidy.  
Anal cell angulate at posterior apex or drawn out into a triangle ..... 6.
6. Front with strong transverse wrinkles bearing obscure punctures.  
*Notogramma* Loew.  
Front not strongly punctured or wrinkled ..... *Euxesta* Loew.

***Macrostenomyia guerini* Bigot**

*Sepsis guerini* BIGOT, 1857, in Sagra, 'Hist. Phys. Polit. Nat. Cuba,' p. 822.

*Stenomacra guerini* LOEW, 1873, 'Mon. N. A. Dipt.,' III, p. 180.

*Macrostenomyia guerini* HENDEL, 1907, Wien. Ent. Zeit., p. 98.

Male and female, Coamo Springs, April 4, 1930 (W. T. M. Forbes);  
male and female, Cidra, March 25, 1930 (M. D. Leonard).

***Setellia amabilis* Williston**

*Epiplatea amabilis* WILLISTON, 1896, Trans. Ent. Soc. London, p. 376.

Five males and three females, El Yunque, Luquillo Mts., 1500 to 2000 ft., March 29, 1930 (W. T. M. Forbes).

There is no question about this being the species described by Williston, despite the fact that *Epiplatea* Loew has the first vein setose, a character overlooked by Williston. The species is retained in *Epiplatea* by Hendel in 'Genera Insectorum,' number 113.

***Euxesta anomæ* Fabricius**

*Musca anomæ* FABRICIUS, 1794, 'Ent. Syst.,' IV, p. 358.

Four specimens from Porto Real, Vieques, April 28, 1930 (Forbes) and one April 29 (Leonard).

***Euxesta mitis*, new species**

## Figure 4

A very small species with three brownish-black spots on the wings and a very prominent clypeus. Length, 2.25 to 2.4 mm.

FEMALE.—Head black; anterior half of the front and the upper half of the face reddish; front strongly widening posteriorly; face projecting below, the clypeus very

prominent, shining black; palpi brownish; frontal lunule whitish pollinose. Antennæ reddish, the apex of the third segment broadly brown; third segment short oval; arista brown.

Thorax bluish black, shining; two dorsocentrals, the anterior pair weak; hair not abundant; scutellum convex, with four bristles.

Legs black; knees and tarsi luteous, the tarsi with the apical two segments brownish; coxae and trochanters yellowish brown; hair black.

Wings hyaline, a narrow sub-basal band extending more than half-way to the posterior border of the wing, a large, subquadrate median spot and a triangular apical spot lying in front of the third vein, blackish brown. Halteres white.

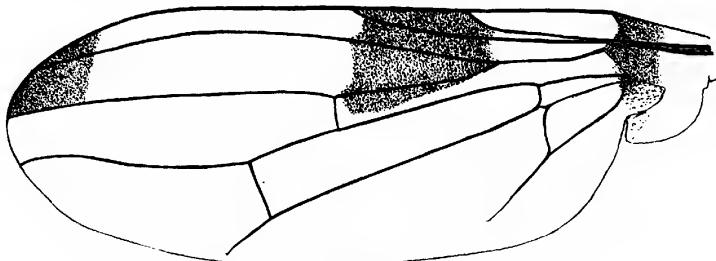


Fig. 4. Wing of *Euxesta mitis*, new species.

Abdomen shining black or bluish black, with sparse, short black hair. Ovipositor longer than wide, gently tapering.

**TYPES.**—Holotype, female, and one female paratype, Puerto Real, Vieques Island, April 29, 1930 (Forbes). The paratype is in Cornell University collection.

This species is rather aberrant for the genus but nevertheless I feel that it belongs here. The oral margin is more projecting than usual and the clypeus is much more developed than in any of the other species I have seen. In the key to the species on page 77 of the 'Diptera of Porto Rico,' etc., *mitis* will trace to *costalis* Fabricius but the wide front, wing markings, etc., at once separate it.

#### SAPROMYZIDÆ

An examination of specimens of *Pseudogriphoneura cineracea* Coquillett, from Florida proves that the specimen I recorded from Porto Rico belongs to a different species. Of the three species contained in the list on page 116 of the 'Diptera of Porto Rico,' *Sapromyza cincta* Loew belongs to the genus *Camptoprosopella* Hendel and the record is probably based on *C. diversa* Curran. *C. cincta* has generally been considered a synonym of *vulgaris* Fitch but I suspect that it is a distinct species; *S. octopunctata* Wiedemann I discuss below under *Pseudogriphoneura anomala* Curran; *Physegenua ferruginea* Schiner I have not seen from the Islands.

**PSEUDOGRIPHONEURA** Hendel

As indicated above there is some confusion in regard to the identification of the species belonging to this genus. I am therefore presenting an amended key to the species and discussing the relationships of the species concerned.

## TABLE OF SPECIES

1. Mesonotum black, with two broad whitish vittæ which continue around the border of the scutellum..... *albovittata* Loew.
2. Mesonotum differently colored..... 2.
2. Scutellum black or brown, pale pollinose..... 3.
3. Scutellum reddish with a black spot on either side apically..... *anomala* Curran.
3. Face, from dorsal view with two or four bare, longitudinal vittæ.
  - vittifacies*, n. sp.
  - Face wholly pollinose (Florida)..... *cineracea* Coquillett.

***Pseudogriphoneura albovittata* Loew**

*Lauxania albovittata* LOEW, 1852, 'Cent.', II, No. 79.

Three specimens, Cidra, March 28, 1930 (M. D. Leonard).

***Pseudogriphoneura anomala* Curran**

CURRAN, 1926, Amer. Mus. Novit., No. 220, p. 13.

?, *Sapromyza octopuncta* WIEDEMANN, 1830, 'Ausser. Zweifl.', II, p. 454.

After further study of the description of *octopuncta*, specimens of *Minettia slossonæ* Coquillett, and the types of *anomala*, I am inclined to the belief that *octopuncta* has been misidentified by authors and that the name applies to *anomala*. However, the fact that Wiedemann made no mention of the black spot on the pleura leaves the question in doubt. Certainly Wiedemann's description fits *anomala* in other respects, particularly in having the black spots on the sides of the second to fourth segments increasing in size on the apical segments. As indicated in my description of *anomala* there is only a single sternopleural bristle and an intra-alar bristle is present. This latter character does not agree with the diagnosis of *Pseudogriphoneura*, nor does the absence of the anterior sternopleural agree with *Minettia*. I have previously thought that *M. slossonæ* might be the same as *octopuncta* but the shape of the black abdominal markings precludes this. The type of *octopuncta* is in Copenhagen and I believe that an examination of it will prove the synonymy suggested to be correct, but until this has been determined it is better to use the name *anomala*.

**Pseudogiphoneura vittifacies**, new species

*Pseudogiphoneura cineracea* CURRAN, 1928, 'Scien. Surv., P. R. and Virgin Islands, XI, part 1, p. 83 (not Coquillett).

Related to *cineracea* Coquillett but at once distinguished by the presence of two or four shining vittæ on the face (the outer ones sometimes absent) and the reddish, more extensively brown-pollinose mesonotum and scutellum. Length, 4 mm.

Head brownish, the central part of the front, anterior border and the inner part of the parafacials, reddish; pollen whitish, the stripe along the frontal bristles more yellowish; face with four longitudinal bare vittæ; cheeks with a brown spot on the anterior half; occiput bare except broadly along the orbits. Cheeks broad; palpi black. Antennæ brownish red, the third segment broadly brown above and apically, about three times as long as wide; arista black, moderately long plumose.

Thorax black, the mesonotum, scutellum and mesopleura reddish-brown pollinose, or largely so, each bristle and hair arising from a darker spot; humeri, a contiguous spot inside them, the supra-alar declivity and the pleura gray pollinose, the pale pollen more extensive in the female. Two pairs of dorsocentrals and a pair of prescutellar acrosticals. Hair black.

Legs black; tarsi brown, the bases of the tibiæ and the basal segment of the posterior four tarsi yellowish.

Wings tinged with brown. Halteres yellow.

Abdomen shining black, in some lights very thinly brown pollinose.

**TYPES.**—Holotype, male, Aibonito, July 14–17, 1914; allotype, female, the same data; paratype, female, Adjuntas, June 8–13, 1915.

Among the characters separating this species from *cineracea* are the wider front, brownish instead of luteous wings, larger size, etc.

**MINETTIA** Desvoidy

One of the species before me is new to the Islands, hence I present a key including the five species known to occur.

1. Face unicolorous..... 3.
- Face with a black spot below..... 2.
2. Pleura with two black vittæ; mesonotum vittate..... *picticornis* Coquillett.
- Pleura with two black spots, the mesonotum not vittate..... *slossonæ* Coquillett.
3. Scutellum with a black spot on either side..... 4.
- Scutellum wholly yellowish..... *aibonito* Curran.
4. Black spots lying beneath the apical scutellar bristles..... *mona* Curran.
- Black spots situated between the first and second pairs of scutellars..... *sororia* Williston.

**Minettia picticornis** Coquillett

*Sapromyza picticornis* COQUILLETT, 1904, Proc. Ent. Soc. Wash., VI, p. 189.

Two specimens, Dorado, March 28, 1930 (W. A. Hoffman).

The mesonotum bears four black vittæ and the abdomen a median row of roundish spots and lateral rows of transverse ones.

**Minettia slossonæ** Coquillett*Sapromyza slossonæ* COQUILLET, 1898, Can. Ent., XXX, p. 277.

A female from Cidra, March 28, 1930 (M. D. Leonard).

**MICROPEZIDÆ**

No key to the genera occurring in the Islands was given in the report and one is now presented. Since only one species of each genus is known to occur, identification should not be difficult.

**KEY TO GENERA**

1. Arista dorsal.....	2.
Arista apical.....	<i>Nerius</i> Fabricius.
2. Head higher than long.....	3.
Head longer than high.....	<i>Micropeza</i> Meigen.
3. Arista bare.....	4.
Arista plumose.....	<i>Systellapha</i> Enderlein.
4. Apical petiole of the anal cell much longer than the width of the cell.	<i>Hoplocheiloma</i> Cresson.
Petiole of anal cell very short, not nearly as long as the width of the anal cell.	
	<i>Tæniaptera</i> Macquart.

***Nerius* cinereus** Roeder

ROEDER, 1885, Stett. Ent. Zeit., p. 348.

I have not seen specimens of this species which was originally described from Porto Rico.

***Micropeza* limbata** Roeder

ROEDER, 1885, Stett. Ent. Zeit., p. 347.

Female, Cidra, March 28, 1930 and female, Mavicao, May 30, 1930 (M. D. Leonard).

***Systellapha* scurra** Enderlein

ENDERLEIN, 1922, Arch. Naturg., Abt. A, LXXXVIII, Heft, 5, p. 191.

Eight females, El Yunque, Luquillo Mts., March 29, 1930, 2000 to 3500 ft. (W. T. M. Forbes).

***Tæniaptera* lasciva** Fabricius*Musca* *lasciva* FABRICIUS, 1798, 'Syst. Ent.' Suppl., p. 564.

Male and female, Rio Piedras, March 25, 1930 (W. T. M. Forbes).

**CLUSIIDÆ**

This family has not previously been recorded from Porto Rico, although known to occur in adjacent islands.

**Sobaroccephala bivittata** Melander and Argo

MELANDER AND ARGO, 1924, Proc. U. S. Nat. Mus., LXIV, Art. 11, p. 37.

Male and female, Dorado, March 28, 1930 (W. A. Hoffman).

Both specimens have the scutellum wholly yellowish but are otherwise typical. The type series from Costa Rica contained specimens agreeing with those before me.

**SARCOPHAGIDÆ****Sarcophaga culminata** Aldrich

ALDRICH, 1916, 'Sarcophaga and Allies,' p. 289.

One male, Cidra, March 26, 1930 (Leonard).

In the above cited reference Aldrich included this species in group H in which there are four postsutural dorsocentral bristles. Despite this I determined specimens having only three postsuturals as this species and an examination proves that the type has the fewer number and should have been included in group D.

**Sarcophaga plinthopyga** Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 360.

*Sarcophaga robusta* ALDRICH, 1916, 'Sarcophaga and Allies,' p. 268.

One male, Puerto Real, Vieques Island, April 29 (Forbes).

**TACHINIDÆ**

Of the four species of Tachinidæ in the present collection, each belonging to a different genus, two have not previously been recorded from the Island.

**EPIGRIMYIA** Townsend

This genus, not previously reported from Porto Rico, traces to *Stomatodexia* Brauer and Bergenstamm in the key. It differs in that the arista is not short plumose. Some of the species of *Epigrimyia* (including the genotype) have the apical cell closed in or near the wing margin but the character is hardly sufficiently important to serve as the basis for distinct genera.

***Epigrimyia townsendi*, new species**

Related to *robertsoni* Townsend but with black legs, more broadly shining segmental apices and the third vein bristled as far as the anterior cross-vein. Length, 5.5 mm.

**FEMALE.**—Head black, white pollinose, the front and upper posterior orbits with yellow tinge; face and cheeks reddish yellow in ground color, the facial ridges black. Apical section of proboscis equal to head-height; palpi reddish yellow;

antennæ reddish yellow, the third segment mostly black; arista black, distinctly pubescent; occiput pale pilose except above.

Thorax black, cinereous-white pollinose, the four dark vittæ distinct, the pollen between the outer and inner vittæ brownish. Acrosticals, 2-3; dorsocentrals, 3-3; posterior sublateral absent; sternopleurals, 2-1; three pairs of marginal scutellars and a pair of apical, non-cruciate bristly hairs; hair of thorax black.

Wings cinereous hyaline; apical cell open a little before the wing-tip; third vein bristled from its base to the small cross-vein. Squamae white. Halteres pale yellow.

Legs black; anterior tibiae with a single posterior bristle.

Abdomen black, the apical third of the third segment and the whole of the fourth reddish; second to fourth segments moderately cinereous pollinose on the basal two-thirds. Abdomen without discals; second segment with a pair of marginals, the third and fourth each with a row.

TYPE.—Female, Isabela Substation, April 24, 1930 (Forbes and Leonard).

#### **Stomatodexia cothurnata** Wiedemann

*Stomoxys cothurnata* WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, 249.

Two females, Cidra, March 26, 1930 (Leonard) agree with the specimens previously recorded from the Islands. The record of *Leskia analis* from Porto Rico undoubtedly refers to this species.

#### **Rhynchodexia sororia** Williston

WILLISTON, 1896, Trans. Ent. Soc. London, p. 360.

One specimen, Rio Piedras, April 24, 1930 (Leonard).

I suspect that this name should be replaced by *rufianalis* van der Wulp but I have not examined sufficient material from Mexico to decide the question.

#### **ORMIA** Desvoidy

The species of this genus are all rusty yellowish in color, rarely with darker markings. The genus is readily recognized by the greatly swollen medianly sulcate prosternum. *Ormia punctata* Desvoidy has been recorded from Porto Rico but the record evidently refers to the following species.

#### **Ormia dominicana** Townsend

TOWNSEND, 1919, Proc. U. S. Nat. Mus., LVI, p. 548.

One female, Coamo Springs, April 10, 1930 (Forbes).

In the brief description no mention is made of the color of the epaulet of the wings. In the specimen before me this part is not black as is the case in most of the species, so it is possible that the specimen before me is not *dominicana*. Without an examination of the type it is not possible to decide the matter.

